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EXAMINER

MILLER, ROSE MARY

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/786,794

Applicant(s)

BROOKS ET AL

Examiner

Rose M Miller

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-58, 84, 105 and 122-141 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 45-58, 84, 105, 122-141 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 55-57, 125, and 140 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 55-57 are rejected as being confusing and indefinite. Claims 55-57 recite a long list of "biological structures". Confusion arises from the wording of the claims. Claim 45, from which all of these claims ultimately depend, recites "augmenting at least one function" of the targeted biologic structure. It is unclear how one augments "proteins", "capsule", "carbohydrates", "glycolipids", "endotoxins", "exotoxins" and many others recited in the long list provide. The definition of "augment" is "to make greater". Applicant has defined augmentation as encompassing "beneficial effects on the biologic structure. Such augmenting of functions or enhancing effecting include but are not limited to enhancement of growth, reproduction, regeneration, embryo-genesis, metabolism, fermentation, and the like." What "function" of "carbohydrates" is augmented by the disclosed invention? What "beneficial effects" are produced by placing the "carbohydrates" or "proteins" in resonance? Or how is the "capsule" augmented or made greater? The specification is unclear on exactly how each of these recited elements is "augmented" by being placed in a resonant state. Therefore, one of ordinary skill in the art cannot determine how Applicant's invention applies to such "biological structures".

Claim 125 is rejected as being indefinite as the phrase "said contacting" lacks a proper antecedent basis.

Claim 140 is rejected as being indefinite as the phrase "enhancing generation" is unclear. What "generation" is enhanced? From the specification and claim 139, it appears applicant meant to say the germination of the plant was enhanced. For the purposes of applying art, the claim will be treated as if the phrase was --enhancing germination-- instead of the "enhancing generation" now found in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 45-58, 84, 105, and 122-141 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Azure (US 5,908,444)** in view of **Findl (US 4,850,959)** and **Baugh (US 5,935,516)**.

Azure discloses at column 3 lines 19-29, that the application of an alternating electric field at some specific frequency within an applied pulse spectrum excites specific molecular resonance so as to accelerate biochemical processes, and/or excite

mechanical vibrations of electrically charged molecules to produce acoustic energy that operates to increase blood flow and membrane permeability (inherently activates an acoustic resonance of the molecules and thereby increases the function of the targeted structure).

Findl teaches at column 3 lines 19-35 that the use of pulses or alternating electric fields, amplitude modulated radio frequency fields, and amplitude modulated ultrasonic vibrations (acoustic vibrations) can be used in place of each other and in place of low frequency electromagnetic fields in order to influence the biological functions of a targeted biologic structure.

Baugh teaches at column 9 lines 6-42 that the introduction of harmonic music in a controlled environment has been found to be particularly beneficial to both plants and animals within the controlled environment. When the music is tuned properly, the sounds of the harmonic music will be tuned to the antenna of the DNA and cellular structure of the cells of the animals and thereby causes a resonance of such cells and alters the vibratory cycle of the cells, leading to the improved health thereof, and leading to the deterioration of abnormal cells.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to augment the function of a targeted biologic structure by placing the structure in a state of resonance as taught by **Azure**, and specifically augmenting the biologic structure by inducing acoustic resonance in the biologic structure, as **Findl** clearly teaches the equivalents of ultrasonic (acoustic) vibrations and alternating electric fields for influencing the biological functions of a structure and **Baugh** clearly teaches that placing a biological structure in a state of acoustic resonance improves the health of the biological structure (clearly an indication of augmentation of the functions of the biological structure).

With regards to claim 46, **Azure** clearly discloses the applied energy having a pulse spectrum that excites a specific molecular resonance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply at least one resonant acoustic frequency of the biologic structure to the biologic

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structure in order to excite the desired acoustic resonance that produces the augmented function.

With regards to claims 47-48, **Azure** discloses applying a spectrum of frequencies to the biological structure in order excite the molecular resonance. **Azure** discloses the claimed invention with the exception of applying at least a portion of an acoustic signature of the biologic structure or applying at least one substantially complete acoustic signature of the biologic structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply either a portion of an acoustic signature or a substantially complete acoustic signature of the biologic as each structure will have different characteristics and even characteristics which could change during the application of the ultrasound. **Azure** compensates for this by applying a spectrum of frequencies to the biological structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to enhance the output of the apparatus by utilizing a signal consisting of a series of resonance peaks found in the acoustic signature to match the acoustic treatment to the individual structure in order to reduce the complexity of the apparatus and to eliminate the possibility of inducing a harmful resonance within the biological structure.

Azure relates the use of EM energy (electromagnetic energy) to acoustics at column 3 lines 19-29. Briefly, **Azure** teaches that the application of EM energy to a biologic structure results in acoustic energy being produced within the biologic structure. This acoustic energy is a version of the "acousto-EM" signature claimed.

Therefore, with regards to claims 49-51, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize either at least one resonant acousto-EM energy, at least a portion of an acousto-EM signature of the biologic structure, or at least one substantially complete acousto-EM signature of the biologic structure in the application in order to induce acoustic resonance as **Azure** clearly teaches using EM energy to produce acoustic energy within a biologic structure. As for the use of either a partial or substantially complete signature, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply either a portion of a signature or a substantially complete signature of the biologic as

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each structure will have different characteristics and even characteristics which could change during the application of the selected energy. **Azure** compensates for this by applying a spectrum of frequencies to the biological structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to enhance the output of the apparatus by utilizing a signal consisting of a series of resonance peaks found in the acoustic-EM signature to match the acoustic treatment to the individual structure in order to reduce the complexity of the apparatus and to eliminate the possibility of inducing a harmful resonance within the biological structure.

With regards to claims 52 and 53, **Azure** fails to specifically disclose the function being augmented comprising at least one function selected from the group of functions consisting of growth, reproduction, regeneration, embryogenesis, metabolism, fermentation, germination, oxidation or reduction activity, and wound healing. **Azure** broadly discloses treating a whole patient, specifically an HIV infected patient, without specifically indicating the functions being augmented. **Findl** teaches using acoustic energy to augment the function of a liver in a patient and therefore influence the metabolism and other functions of the patient. **Baugh** discloses using acoustic resonances to improve the health of both animals and plants but fails to specifically recite a particular function which is augmented. However, one of ordinary skill in the art would know that an increase in health is related to improved growth, reproduction, regeneration, metabolism, or any combination thereof. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the disclosed system of **Azure** to augment a specific function of the biologic structure if the augmentation of the specific function was the only desired result instead of the overall health of the biologic structure being improved. One of ordinary skill in the art would know to correlate a specific resonant frequency or series of resonant frequencies to a desired function such as disclosed by **Findl** in the treatment of a patient's liver.

With regards to claims 54-57, **Azure**, **Findl**, and **Baugh** all disclose treating complete organs or organisms such as human patients, livers, animals (specifically a snake), and plants.

With regards to claim 58, **Azure** discloses the claimed invention with the exception of specifically using acoustic energy and using selected frequencies that augment the targeted biologic structure but have no substantial deleterious effect on nearby, non-resonating structures. For the use of acoustic energy instead of electric energy, please see the rejection of claims 45-46 above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize selected frequencies as one of ordinary skill would not want to damage surrounding tissues or structures. Furthermore, it has been well demonstrated in the art of applying ultrasound or acoustic energy for medical purposes that the use of selected frequencies in combination with focused waves enables a specific area of a biologic structure to be targeted without affecting surrounding structures.

With regards to claim 84, it would have been obvious to one of ordinary skill in the art at the time the invention was made to detect at least one signature of the targeted biologic structure and compare it against a reference or standard signature in order to calibrate the apparatus applying the ultrasound/acoustic energy so that the best results can be obtained from the application of the ultrasound/acoustic energy.

With regards to claim 105, it is inherent in the application of ultrasonic energy to include means for generating an acoustic signal, means for transmitting the acoustic signal to the targeted structure, and means for controlling the power level of the applied ultrasonic signal as it is well known in the art of targeting biologic structures that too high a power level would result in a disruption or destruction of the biologic structure instead of enhancing or augmenting the function of the targeted structure as desired.

With regards to claims 122-123, **Azure** fails to specifically disclose determining at least one first resonant frequency of an aquatic species (or an acoustic resonance frequency profile) and applying said at least one first resonance frequency at a sufficient power intensity to cause augmenting to occur. **Azure** clearly discloses the applied energy having a pulse spectrum that excites a specific molecular resonance whereas **Findl** teaches the equivalent of applied electrical pulses and ultrasonic energy for putting a biologic structure into a state of resonance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply at

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least one resonant acoustic frequency of the biologic structure to the biologic structure in order to excite the desired acoustic resonance that produces the augmented function. And in order to determine the acoustic resonant frequency needed to produce the desired results, one of ordinary skill in the art would have known to determine either the acoustic resonant signature of the targeted species or at least determine the resonant frequency which produces the augmented function desired. **Baugh** teaches at column 9 lines 6-42 that the introduction of harmonic music in a controlled environment has been found to be particularly beneficial to both plants and animals within the controlled environment. When the music is tuned properly, the sounds of the harmonic music will be tuned to the antenna of the DNA and cellular structure of the cells of the animals and thereby causes a resonance of such cells and alters the vibratory cycle of the cells, leading to the improved health thereof, and leading to the deterioration of abnormal cells. And one of ordinary skill in the art would know that an improved health of any animal would lead to the improved growth of said animal, including any aquatic species selected for targeting. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to augment the growth of an aquatic species by determining at least one acoustic resonant frequency of the aquatic species (or animal targeted) and to apply said at least one resonant frequency to augment the growth of the aquatic species as **Azure** clearly teaches the augmentation of an organism by applying energy to the organism and **Baugh** clearly teaches the application of acoustics to increase the health (and therefore the growth) of any animal or plant in a controlled environment.

With regards to claim 124, it is well known throughout the art of acoustic measuring and testing to utilize at least one transducer to transmit the desired acoustic energy to the structure selected.

With regards to claim 125, **Azure** clearly teaches that a spectrum of frequencies can be utilized in order to activate one or more resonant frequencies of the targeted structure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to scan the aquatic species with a range of acoustic frequencies in order to determine the acoustic resonance frequency profile of the

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aquatic species as one of ordinary skill in the art would recognize the scanning as a well known technique utilized in order to insure the proper frequencies were targeted in order to produce the desired results.

With regards to claim 126, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize at least one second resonant frequency of said aquatic species as every structure, biological and non-biological, has more than one resonant frequency. By utilizing more than one resonant frequency, one of ordinary skill in the art would have enhanced the desired results (or augmentation) with minimal increase in operating cost and equipment.

As for claim 127, it would have been obvious to one of ordinary skill in the art to apply a second resonant frequency at a later time after the aquatic species has grown as one of ordinary skill in the art would have known that as the aquatic species grows, the resonant signature or profile of the aquatic species will have changed. Therefore, one of ordinary skill in the art would have known to monitor the changes in the acoustic resonance profile and to adjust the frequency of the applied acoustic energy in order to sustain the augmentation of the growth of the aquatic species.

As for claims 128, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place at least one transducer in communication with the aquatic species as the system would not be able to apply the desired acoustic frequencies to the aquatic species unless at least one transducer was in communication with the aquatic species. Furthermore, **Baugh** discloses using one or more transducers (speakers 106) to apply desired sounds to the species being augmented by piping the sound into the controlled environment.

As for claim 129, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the at least one transducer in at least one wall of an enclosure that contains said aquatic species as **Baugh** discloses using one or more transducers (speakers 106) to apply desired sounds to the species being augmented by piping the sound into a controlled environment. One of ordinary skill in the art would have known that the best place to position the at least one transducer

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would have been in the wall of the controlled environment in order to provide the proper support for said transducer.

With regards to claims 130-131, the increase in the health of the animals and plants in the controlled environment as taught by **Baugh** inherently includes an increase in the survivability and growth rate of the aquatic species as a healthier plant or animal will be better able to survive and grow than a plant or animal not as healthy.

With regards to claim 132, please see the rejection of claims 126 and 127 above.

With regards to claims 133-135, **Baugh** teaches that the use of acoustic resonance will increase the health of any animal. Therefore, the specific augmentation of at least one fish, at least one small-fry fish, or a plurality of fish contained in an enclosure would have been obvious to one of ordinary skill in the art at the time the invention was made as **Baugh** does not differentiate between different animals or different species of animals.

With regards to claims 136, **Azure** fails to specifically disclose determining at least one first resonant frequency of a plant species (or an acoustic resonance frequency profile) and applying said at least one first resonance frequency at a sufficient power intensity to cause augmenting to occur. **Azure** clearly discloses the applied energy having a pulse spectrum that excites a specific molecular resonance whereas **Findl** teaches the equivalent of applied electrical pulses and ultrasonic energy for putting a biologic structure into a state of resonance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply at least one resonant acoustic frequency of the biologic structure to the biologic structure in order to excite the desired acoustic resonance that produces the augmented function. And in order to determine the acoustic resonant frequency needed to produce the desired results, one of ordinary skill in the art would have known to determine either the acoustic resonant signature of the targeted species or at least determine the resonant frequency which produces the augmented function desired. **Baugh** teaches at column 9 lines 6-42 that the introduction of harmonic music in a controlled environment has been found to be particularly beneficial to both plants and animals within the controlled environment. When the music is tuned properly, the sounds of the harmonic music will

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be tuned to the antenna of the DNA and cellular structure of the cells of the animals and thereby causes a resonance of such cells and alters the vibratory cycle of the cells, leading to the improved health thereof, and leading to the deterioration of abnormal cells. And one of ordinary skill in the art would know that an improved health of any plant would lead to the improved growth of said plant, including any plant species selected for targeting. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to augment the growth of a plant species by determining at least one acoustic resonant frequency of the plant species and to apply said at least one resonant frequency to augment the growth of the plant species as **Azure** clearly teaches the augmentation of an organism by applying energy to the organism and **Baugh** clearly teaches the application of acoustics to increase the health (and therefore the growth) of any plant in a controlled environment.

With regards to claim 137, **Azure** clearly teaches that a spectrum of frequencies can be utilized in order to activate one or more resonant frequencies of the targeted structure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to scan the plant species with a range of acoustic frequencies in order to determine the acoustic resonance frequency profile of the plant species as one of ordinary skill in the art would recognize the scanning as a well known technique utilized in order to insure the proper frequencies were targeted in order to produce the desired results.

With regards to claim 138, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize at least one transducer and at least one signal generator to perform the frequency sweeping process as such elements are well known throughout the art of acoustic measuring and testing for performing such functions.

With regards to claims 139-140, the increase in the health of the animals and plants in the controlled environment as taught by **Baugh** inherently includes an increase in the germination and growth rate of the plant species as a healthier plant or animal will be better able to survive (or germinate) and grow than a plant or animal not as healthy.

As for claims 141, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place at least one transducer in communication with the plant species as the system would not be able to apply the desired acoustic frequencies to the plant species unless at least one transducer was in communication with the plant species. Furthermore, **Baugh** discloses using one or more transducers (speakers 106) to apply desired sounds to the species being augmented by piping the sound into the controlled environment.

Response to Arguments

7. Applicant's arguments filed 23 February 2004 have been fully considered but they are not persuasive.

Applicant argued the following:

"Claims 45-58, 84, 105 and 122-141 were rejected under §103 (a) as being unpatentable over Azure (US 5,908,444) in view of Findl (US 4,850,959) and Baugh (US 5,935,516). This rejection is respectfully traversed. Applicants appreciate the detailed reasoning set forth by the Examiner in the Action.

Azure does not disclose or suggest the claimed augmenting at least one function of a biologic structure by "targeting the biologic structure by inducing acoustic resonance" (see Claims 45-58, 84 and 105); or augmenting the growth of an aquatic species by "applying at least one first resonant frequency", etc. (see claims 122-141).

Applicants refer to Figures 1 and 2 of Azure. A human "patient" 48 is positioned in proximity to a Tesla coil 26 which is connected to a light emitting system 6 containing a plurality of tubes 32. Azure discloses that various gases such as hydrogen, helium, argon, neon, xenon, Krypton, etc., may be contained within the tubes (see, Col. 4, lines 10-11).

Azure further discloses that his invention "...advantageously provides a wide spectrum of harmonics up to approximately 2 GHz." (see, Col. 3, lines 9-10; emphasis added).

Azure further discloses at Col. 4, lines 61-62 that his Tesla coil: "...produces electromagnetic emissions over a broad range of harmonic frequencies" (emphasis added).

Column 5, lines 6-9 of Azure, disclose: "The electromagnetic emissions from the tubes 32 include harmonic frequencies in the visible portion of the electromagnetic spectrum, and each gas produces light having a different color" (emphasis added).

Azure further discloses at Column 5 lines 16-21, that: "...the transformer 4 (containing the Tesla coil 26, sic.) and the light emitting system 6 generate electromagnetic emissions at harmonic frequencies between 500 kHz and 3 GHz A patient situated proximate to the unit may benefit from the broad range of harmonic frequencies generated by the BELS unit 8" (emphasis added).

Applicants' last quote taken from Azure occurs at Column 7, lines 5-8: "Therefore, the patient 48 benefits from the general exposure to the broad band PEMF generated by the Tesla coil 26, the wavelengths emitted by the light emitting system 6, and the broadband PEMF focused by the coil 64" (emphasis added).

The teachings of Azure are similar to the teachings of many of the references previously made of record by Applicants. Specifically, Azure discloses another technique and apparatus for the medical treatment of patients similar in approach to many other known devices/techniques already of record. Many claims relating to surprise healing exist in the art relating to such devices. However, a significant shortcoming of all of the cited references, including most certainly the Patent to Azure, is the lack of disclosure in each reference regarding the claimed targeting of a biologic structure by inducing acoustic resonance (see e.g., claim 45) or the claimed augmenting the growth of an aquatic species by applying at least one first resonant frequency, as claimed (see e.g., claims 122 and 132).

Azure discusses the frequency dependent reaction of cells to only electromagnetic fields and nowhere considers the reaction of cells to resonant acoustic fields. Azure further teaches away from any targeting at all, electromagnetic, acoustic, or otherwise. For example, at Col. 1, lines 57-58, Azure apparently concedes that ".... the frequencies required by specific cells is not readily determined" and thus there is a need to use "...complex frequency PEMFs." "

The Examiner is not disputing Applicant's assessment of Azure as presented above. However, Applicant is performing a piecemeal analysis of a rejection that utilizes a combination of references. It is the combination of these references that is relied upon to reject Applicant's claims. Azure is relied upon to teach placing the biological structure into resonance in order to augment the function of the structure. Azure is not relied upon for the generation of acoustic resonance within the biological structure as argued above. Findl is relied upon to teach that electromagnetic resonance (as used by Azure) and acoustic (or ultrasonic) resonance can be used in place of each other in order to influence the biological functions of a structure. Therefore, the teachings of Azure, though performed with electromagnetic energy and resonances, are applicable when one is utilizing acoustic energy and acoustic resonances.

8. Applicant continues to argue:

*"The claimed targeting to achieve acoustic resonance is very important. Applicants' specification throughout refers to the importance of the claimed "targeting" to achieve resonance. For example, Applicants direct the attention of the Examiner to page 5, lines 7-16, of the present specification which discusses certain principles relating to resonance and the importance of resonance. The claimed targeting permits acoustic resonance to be achieved in **targeted biologic structures**. This permits desirable interactions to occur with the targeted biologic structures, without, for example, the need for high power levels (e.g., resonance permits small amounts of energy to be built up rapidly in a system), or the potential negative consequences of energy being applied and/or used in a shotgun or blindfolded approach (e.g., resonance can be very directed or targeted to specific structures). Thus, without using the claimed techniques to achieve acoustic resonance, the prior art is reduced to a batch of hit or miss techniques, some of which prior art techniques can have undesirable consequences."*

It is clear that Applicant is not reading the claims in the same manner as the Examiner or is reading more of the Specification into the claims than is actually present. Claim 45 clearly states "targeting the biologic structure by inducing acoustic resonance in the biologic structure" (emphasis added by Examiner). The "targeting" of the biologic structure, at least in this claim, is not done before the structure is induced into resonance. Furthermore, if the targeting of the structure is so important as argued, why is it not predominate in the claim? If you want to insure the proper resonance, shouldn't the specifics of the "target" be determined before the structure is placed into resonance? The claims which do actually determine the "resonances" beforehand are claims 122-141.

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However, it would also have been obvious to one of ordinary skill in the art at the time the invention was made to determine the proper resonances before beginning the "augmentation" as it is well known throughout the acoustic/ultrasonic art that the wrong resonances can destroy a biological structure by inducing heating and other unwanted energies within the cellular structure. Therefore, one of ordinary skill in the art would want to be sure to induce the proper resonances in order to produce the desired results.

It is also very well known in the art of ultrasonic measuring and testing, and specifically in medical ultrasonic measuring and testing, that using frequencies of acoustic resonance within a biological structure allows for desirable interactions to occur with the targeted biologic structures, without, for example, the need for high power levels or the potential negative consequences of energy being applied. Such "targeting" is often used when it is desired to destroy a particular cellular structure without causing undue damage to surrounding tissues.

9. Applicant continues:

"The following passages in the present specification discuss the inducing of acoustic resonance: Specifically, Page 8, lines 8-10 recite the following:

"The resonant frequency of a biologic structure may be determined by performing resonant acoustic spectroscopy using methods and systems well known in the art."

It is unclear why Applicant is arguing this passage. The claims as they are now present do not claim performing a "resonant acoustic spectroscopy" in order to determine the resonant frequencies of the biological structure. Furthermore, such a test would not inform one of ordinary skill which resonance frequencies would produce "augmentation" and which would produce "disruptions" in the biological structure but would rather just produce a "signature" of resonances present in the biological structure.

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10. Applicant continues:

"Moreover, the present invention teaches at Page 11, lines 16-19 the following:

"The targeted structure can be induced into acoustic resonance by introducing acoustic energy including at least one resonant acoustic frequency, electromagnetic energy equivalent to the resonant acoustic frequency, and/or electromagnetic energy pattern equivalent to the acousto-EM signature."

From this passage, it appears Applicant is confirming the Examiner's combination of Azure with Findl in order to teach the similarities of resonances produced by electromagnetic energy and that produced by acoustic energy. I'm sure that was not Applicant's intention but this statement clearly indicates the equivalence of electromagnetic resonance and acoustic resonance when augmenting the function of a selected biological structure.

11. Applicant continues:

"Further, the present Specification teaches at Page 13, lines 10-18 the following:

"In another embodiment of the present invention a system for augmenting and/or disrupting a targeted biologic structure comprises means for applying acoustic energy including a previously determined resonant acoustic frequency to induce acoustic resonance in the biologic structure, the acoustic energy being applied at a sufficient power input to affect functions of the biologic structure. Alternatively, the targeted structure may be induced into acoustic resonance by providing electromagnetic energy equivalent to the resonant acoustic frequency or the acousto-EM signature that was previously determined, such as direct and alternating current, electric and magnetic fields, and electromagnetic energy."

Applicants respectfully submit that broadband PEMF approach taught by Azure is commonplace prior art and does not recognize the importance of the claimed "targeting the biologic structure by inducing acoustic resonance" (see claims 45-58, 84 and 105) or the claimed application of "at least one first resonant frequency" (see claims 122-131) or the claimed "first acoustic resonance frequency" (see claims 132-141)."

Again, Azure does not have to induce "acoustic resonance" within the biological structure. Azure is relied upon to teach the use of "resonance" within a biological structure in order to "augment" the function of the biological structure. And a broadband pulse, as generated by Azure, will induce "resonance" in a biological structure just as easily as a narrower pulse as long as the proper frequencies are transmitted to the biological structure. Applicant's claims, as they are now presented, do not exclude the use of a broadband pulse as long as the broadband pulse contains the desired frequencies necessary to induce resonance within the biological structure.

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12. Applicant continues with regard to Findl:

"Moreover, Findl does not remedy the deficiencies in the disclosure of Azure. Findl discloses at column 3, lines 2-11, his definition of a resonant frequency. In particular, Findl discloses the following at column 3, lines 2-6:

By "resonant frequency electromagnetic fields", as used in the specification and appended claims, is meant any waveform, having a fundamental or modulation frequency of 15 Hz, or an odd multiple thereof, up to about the 19th harmonic, i.e. about 285 Hz.

Findl apparently observed that these frequencies (i.e. 15 Hz, etc.) somehow assist in, for example, calcium ion cellular transport. However, there is no disclosure or suggestion in Findl of the claimed "targeting the biologic structure by inducing acoustic resonance" (see claims 45-58, 84 and 105) or the claimed application of "at least one first resonant frequency" (see claims 122-131) or the claimed "first acoustic resonance frequency" (see claims 132-141)."

Findl is relied upon to teach the similarities between electromagnetic resonance and acoustic resonance. As such, Findl is not required to produce a general "acoustic resonance" as argued by Applicant. The fact that Findl has found a specific "resonance" which performs the desired function of "augmenting" the biologic structure is still relevant as the frequency does produce a resonance within the biological structure as claimed by Applicant. There is no wording within the claims as they are now presented which excludes the teachings of Findl as would have been understood by one of ordinary skill in the art at the time the claimed invention was made.

13. Applicant continues:

"Further, the disclosure of Baugh does not provide any insight which would overcome the deficiencies of Azure and/ Findl. Specifically, there is no disclosure or suggestion of the claimed importance of targeting the biologic structure by inducing acoustic resonance."

Again, Applicant is performing a piecemeal analysis of the references used in the rejection. It is the combination of references which, when taken together, teaches Applicant's claimed invention.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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14. With regards to the Section 112, second paragraph rejection of claims 55-57, 125, and 140, Applicant comments as follows:

"Claims 55-57, 125 and 140 were rejected under Section 112, second paragraph. Applicants respectfully traverse the rejection of claims 55-57. In particular, all of the biologic structures recited in claims 55-57 perform various functions, all of which are well known in the art. Claim 45, from which claims 55-57 depend, recites augmenting at least one function of a biologic structure. Applicants believe that these claims are definite within the meanings of section 112, second paragraph.

Applicants appreciate the Examiner pointing out the grammatical problems in claims 125 and 140. Claim 125 shall be amended by changing "contacting" to -measuring--; and claim 140 shall be amended by changing "generation" to -germination---. Applicants can provide a clean copy of all the pending claims or the Examiner is authorized to make these changes to the pending claims, whichever is easier for the Examiner."

This argument is insufficient. The Examiner does not agree that these structures are properly "augmented" by being placed into resonance. It is even unclear how they are "augmented" at all. Specifically, it is unclear how placing any of the following: blood, lens of eye, capsule, spore, shell, cement/cement plate, carbohydrates, lipids, lipopolysaccharides, glycolipids, glycoproteins, chloroplasts, endotoxins, and exotoxins, into resonance enhances or produces "beneficial effects" on the biologic structure itself as claimed. These questions and more are why claims 55-57 have been found to be indefinite under Section 112, second paragraph.

As for claims 125 and 140, the rejections have been made final as Applicant failed to correct those issues presented previously.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

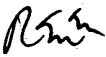
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rose M Miller whose telephone number is 703-305-4923. The examiner can normally be reached on Monday - Friday, 7:30 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 703-305-4705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



RMM

14 May 2004



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800